

**REASONS FOR NOT REPLYING TO
MR. WALTON'S FULL ANSWER**

By

George Berkeley

Edited by David R. Wilkins

2002

NOTE ON THE TEXT

This text is based on the original edition of the *Reasons for not replying to Mr. Walton's Full Answer* published in Dublin in 1735. The copies consulted are those in the Library of Trinity College, Dublin.

The spelling, punctuation and capitalization of this edition follows closely (but is not identical to) that of the 1735 Dublin edition.

The use of quotation marks follows modern practice, and does not correspond to that of the original 1735 text.

There are four copies of this pamphlet in the Library of Trinity College, Dublin. All four have corrections added by hand: in three of them the corrections are identical, and apparently in the same hand; the fourth does not include all the corrections made in the other three, and the corrections are made in a different hand. The handwritten corrections in the first three copies are as follows:—

Section XII: the word ‘the’ is inserted before ‘isochronal’ in the second sentence.

Section XVI: the word ‘the’ is inserted before the first occurrence of ‘celerities’ in the eighth sentence.

Section XVII: the word ‘true’ is changed to ‘trine’.

Section XIX: the word ‘Mr.’ is inserted before ‘*Walton*’ in the first sentence.

Section XX: the word ‘that’ is changed to ‘than’ in the first sentence.

The above changes (incorporated in editions of the Collected Works) have all been included in the present edition.

The editions of the Collected Works edited by Fraser (1871), Sampson (1898), Fraser (1901) and Luce (1951) all depart from the 1735 text (and from this edition) in the following places:—

Section IV: the word ‘perceive’ is replaced by ‘conceive’ in the fifth sentence.

Section VII: the words ‘ever’ and ‘being’ have been transposed in the final sentence.

Section XI: the word ‘a’ has been omitted before ‘wrong sense’ in the penultimate sentence.

In these instances, the edition of the Collected Works published in 1784 and that edited by Wright (1843) both follow the original printed text of the 1735 Dublin edition. Moreover, according to the bibliographies of Jessop and Keynes, this work was never reprinted, except in Collected Works. However all three of the above changes are to be found in the 1833 one-volume edition of the Works of George Berkeley, published in London by Charles Daly, which is based on the 1784 edition, but contains a number of errors.

David R. Wilkins
Dublin, May 2002

REASONS
For not Replying to
Mr. WALTON'S
FULL ANSWER
IN A
LETTER to *P.T.P.*
By the Author of the
MINUTE PHILOSOPHER.

Ex Fumo Lucem.

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REASONS

For not Replying to
Mr. *WALTON*'s
FULL ANSWER &c.

I. THERE are some Men that can neither give nor take an Answer, but writing merely for the sake of writing multiply words to no purpose. There are also certain careless Writers, that in defiance of common sense publish such things as, though they are not asham'd to utter, yet, other men may well be asham'd to answer. Whether there be any thing in Mr. *Walton*'s method of vindicating Fluxions, that might justify my taking no further notice of him on the abovementioned considerations, I leave you and every other Reader to judge. But those, Sir, are not the reasons I shall assign for not replying to Mr. *Walton*'s full Answer. The true reason is, that he seems at bottom a facetious man, who under the colour of an opponent writes on my side of the Question, and really believes no more than I do of Sir *Isaac Newton*'s Doctrine about Fluxions, which he exposes, contradicts, and confutes with great skill and humour, under the masque of a grave vindication.

II. AT first I consider'd him in another light, as one who had good reason for keeping to the beaten Track, who had been used to dictate, who had terms of art at will, but was indeed, at small trouble about putting them together, and perfectly easy about his Reader's understanding them. It must be owned, in an age of so much ludicrous humour, it is not every one can at first sight discern a Writer's real design. But, be a man's Assertions ever so strong in favour of a Doctrine, yet if his Reasonings are directly levelled against it, whatever Question there may be about the matter in Dispute, there can be none about the Intention of the Writer. Should a Person, so knowing and discreet as Mr. *Walton*, thwart and contradict Sir *Isaac Newton* under pretence of defending his Fluxions, and should he at every turn say such uncouth things of these same Fluxions, and place them in such odd lights, as must set all men in their Wits against them, could I hope for a better second in this Cause? or could there remain any doubt of his being a disguised Freethinker in Mathematics, who defended Fluxions just as a certain Freethinker in Religion did the Rights of the Christian Church?

III. MR. *Walton* indeed after his free manner calls my *Analyst* a Libel. * But this ingenious Gentleman well knows a bad Vindication is the bitterest Libel. Had you a mind, Sir, to betray and ridicule any Cause under the Notion of vindicating it, would you not think it the right way to be very strong and dogmatical in the Affirmative, and very weak and puzzled in the argumentative Parts of your Performance? To utter Contradictions and Paradoxes without Remorse, and to be at no pains about reconciling or explaining them? And with great good humour to be at perpetual variance with yourself and the Author you

* *Vindication*, p. 1.

pretend to vindicate? How successfully Mr. *Walton* hath practiced these Arts, and how much to the honour of the great Client he would seem to take under his protection, I shall particularly examine throughout every Article of his full Answer.

IV. FIRST then, saith Mr. *Walton*, “I am to be asked, whether I can conceive Velocity without Motion, or Motion without Extension, or Extension without Magnitude”? To which he answereth in positive Terms, that he can conceive Velocity and Motion in a Point (*P.* 7). And to make out this, he undertakes to demonstrate, “that if a thing be moved by an Agent operating continually with the same force, the Velocity will not be the same in any two different Points of the described Space. But that it must vary upon the least change of Space.” Now admitting thus much to be demonstrated, yet I am still at a loss to perceive, how Mr. *Walton*’s Conclusion will follow, to wit, “that I am greatly mistaken in imagining there can be no Motion, no Velocity in a Point of Space” (*P.* 10). Pray, Sir, consider his Reasoning. The same Velocity cannot be in two Points of Space; therefore Velocity can be in a Point of Space. Would it not be just as good Reasoning to say, the same man cannot be in two Nutshells; therefore a Man can be in a Nutshel? Again, Velocity must vary upon the least change of Space; therefore there may be Velocity without Space. Make Sense of this if you can. What have these Consequences to do with their Premises? Who but Mr. *Walton* could have inferred them? Or how could even he have inferred them, had it not been in jest?

V. SUPPOSE the Center of a falling Body to describe a Line, divide the time of its Fall into equal Parts, for instance into minutes. The Spaces described in those equal parts of Time will be unequal. That is, from whatsoever Points of the described Line you measure a minute’s descent, you will still find it a different Space. This is true. But how or why from this plain truth a Man should infer, that Motion can be conceived in a Point, is to me as obscure as any the most obscure mysteries that occur in this profound Author. Let the Reader make the best of it. For my Part, I can as easily conceive Mr. *Walton* should walk without stirring, as I can his Idea of Motion without Space. After all, the Question was not whether Motion could be proved to exist in a Point, but only whether it could be conceived in a Point. For, as to the proof of things impossible, some men have a way of proving that may equally prove any thing. But I much question whether any Reader of common Sense will undertake to conceive what this pleasant Man at Inference undertakes to prove.

VI. IF Mr. *Walton* really meant to defend the Author of the Fluxionary Method, would he not have done it in a Way consistent with this illustrious Author’s own Principles? Let us now see what may be Sir *Isaac*’s Notion, about this matter. He distinguisheth two sorts of motion, absolute and relative. The former he defineth to be a Translation from absolute place to absolute place, the latter from one relative place to another. * Mr. *Walton*’s is plainly neither of these sorts of Motion, but some third kind, which what it is, I am at a loss to comprehend. But I can clearly comprehend that, if we admit Motion without Space, then Sir *Isaac Newton*’s Account of it must be wrong: For place by which he defines Motion is, according to him, a part of Space. And if so, then this notable Defender hath cut out new Work for himself to defend and explain. But about this, if I mistake not, he will be very easy. For, as I said before, he seems at bottom a back Friend to that great Man; which Opinion you will see further confirmed in the Sequel.

* See Schol. def. viii. Philos. Nat. Princip. Math.

VII. I SHALL no more ask Mr. *Walton* to explain any thing. For I can honestly say, the more he explains, the more I am puzzled. But I will ask his Readers to explain, by what Art a Man may conceive Motion without Space. And supposing this to be done, in the second place to explain, how it consists with Sir *Isaac Newton's* Account of Motion. Is it not evident, that Mr. *Walton* hath deserted from his old Master, and been at some pains to expose him, while he defends one Part of his Principles by overturning another? Let any Reader tell me, what Mr. *Walton* means by Motion, or if he can guess, what this third kind is, which is neither absolute nor relative, which exists in a Point, which may be conceiv'd without Space. This learned Professor saith, "I have no clear Conception of the Principles of Motion." (*P.* 24). And in another place (*P.* 7) he saith, "I might have conceived Velocity in a Point, if I had understood and considered the nature of Motion." I believe I am not alone in not understanding his Principles. For myself, I freely confess the Case to be desparate. I neither understand them, nor have any hopes of being ever able to understand them.

VIII. BEING now satisfied, that Mr. *Walton's* aim is not to clear up or defend Sir *Isaac's* Principles, but rather to contradict and expose them, you will not, I suppose, think it strange, if instead of putting Questions to this intrepid Answerer, who is never at a loss, how often soever his Readers may, I entreat you, or any other Man of plain Sense, to read the following Passage cited from the thirty first Section of the Analyst, and then try to apply Mr. *Walton's* Answer to it: Whereby you will clearly perceive what a vein of Raillery that Gentlemen is Master of. "Velocity necessarily implies both Time and Space, and cannot be conceived without them. And if the Velocities of nascent or evanescent Quantities, *i.e.* abstracted from time and space, may not be comprehended, how can we comprehend and demonstrate their Proportions? Or consider their *rationes primae & ultimae*. For to consider the Proportion or Ratio of Things implieth that such Things have Magnitude: That such their Magnitudes may be measured, and their relations to each other known. But, as there is no measure of Velocity except Time and Space, the proportion of Velocities being only compounded of the direct proportion of the Spaces and the reciprocal Proportion of the Times; doth it not follow, that to talk of investigating, obtaining, and considering the proportions of Velocities, exclusively of Time and Space, is to talk unintelligibly?" Apply now, as I said, Mr. *Walton's* full Answer and you will soon find how fully you are enlightened about the Nature of Fluxions.

IX. IN the following Article of Mr. *Walton's* full Answer, he saith divers curious things, which being derived from this same Principle, that motion may be conceived in a point, are altogether as incomprehensible as the Origine from whence they flow. It is obvious and natural to suppose Ab and Ba * to be Rectangles produced from finite lines multiplied by Increments. Mr. *Walton* indeed supposeth that when the Increments vanish or become nothing, the Velocities remain, which being multiplied by finite lines produce those Rectangles (*P.* 13). But admitting the Velocities to remain, yet how can any one conceive a Rectangular surface to be produced from a line multiplied by a Velocity, otherwise than by supposing such line multiplied by a line or Increment, which shall be exponent of or proportional to such Velocity? You may try to conceive it otherwise. I must own I cannot. Is not the Increment of a Rectangle it self a Rectangle? must not then Ab and Ba be Rectangles? and must not the Coefficients or Sides of Rectangles be lines? consequently are not b and a lines or (which is the

* See Nat. Phil. Princip. Math., l. 2. lem. 2.

same thing) Increments of lines? These Increments may indeed be considered as proportional to and exponents of Velocity. But exclusive of such exponents to talk of Rectangles under lines and velocities is, I conceive, to talk unintelligibly. And yet this is what Mr. *Walton* doth, when he maketh b and a in the rectangles Ab and Ba to denote mere Velocities.

X. AS to the Question, whether nothing be not the Product of nothing multiplied by something, Mr. *Walton* is pleased to answer in the affirmative. And nevertheless when ab is nothing, that is, when a and b are nothing, he denies that $Ab + Ba$ is nothing. This is one of those many Inconsistencies which I leave the Reader to reconcile. But, saith Mr. *Walton*, the Sides of the given Rectangle still remain, which two Sides according to him must form the Increment of the flowing Rectangle. But in this he directly contradicts Sir *Isaac Newton*, who asserts that $Ab + Ba$ and not $A + B$ is the Increment of the Rectangle AB . And, indeed, how is it possible, a line should be the Increment of a Surface? *Laterum Incrementis totis a et b generatur Rectanguli incrementum* $Ab + Ba$ are the Words of Sir *Isaac* *, which words seem utterly inconsistent with Mr. *Walton*'s Doctrine. But, no wonder that Gentleman should not agree with Sir *Isaac*, since he cannot agree even with himself; but contradicts what he saith elsewhere as the Reader may see, even before he gets to the End of that same Section, wherein he hath told us that “the Gnomon and the Sum of the two Rectangles are turned into those two Sides by a retroverted Motion” (P. 11 & 12), which proposition if you or any other Person shall try to make Sense of, you may possibly be convinced, that this profound Author is as much at variance with common Sense, as he is with himself and Sir *Isaac Newton*.

XI. MR. *Walton* in the ninth Page of his Vindication, in order to explain the Nature of Fluxions, saith that “to obtain the last ratio of synchronal Increments, the magnitude of those Increments must be infinitely diminished.” Notwithstanding which, in the twenty third Page of his full Answer he chargeth me as greatly mistaken, in supposing that he explained the Doctrine of Fluxions by the ratio of Magnitudes infinitely diminished. It is an easy matter, for any Author to write so, as to betray his Readers into Mistakes about his meaning. But then it is not easy to conceive, what right he hath to upbraid them with such their Mistakes. If I have mistaken his Sense, let any one judge if he did not fairly lead me into the Mistake. When a Man puzzleth his Reader, saith and unsaith, useth ambiguous Terms and obscure Terms, and putteth them together in so perverse a Manner, that it is odds you can make out no sense at all, or if any, a wrong sense, pray who is at fault but the Writer himself? Let any one consider Mr. *Walton*'s own words, and then say whether I am not justified in making this Remark.

XII. IN the twentieth Page of his full Answer Mr. *Walton* tells us, that “Fluxions are measured by the first or last proportions of isochronal Increments generated or destroyed by motion.” A little after he saith these ratios subsist when the isochronal Increments have no Magnitude. Now, I would fain know whether the isochronal Increments themselves subsist when they have no Magnitude? whether by isochronal Increments we are not to understand Increments generated in equal times? whether there can be an Increment where there is no increase, or increase where there is no Magnitude? whether if Magnitudes are not generated in those equal times, what else is generated therein, or what else is it that Mr. *Walton* calls

* See Nat. Phil. Princip. Math., l. 2. lem. 2.

isochronal? I ask the Reader these Questions. I dare not ask Mr. *Walton*. For, as I hinted before, the Subject grows still more obscure in proportion as this able Writer attempts to illustrate it.

XIII. WE are told (*P.* 22) “that the first or last ratio of the isochronal Spaces hath a real existence, forasmuch as it is equal to the ratio of the two motions of two points; which motions, subsisting when the isochronal Spaces are nothing; preserve the existence of the first or last ratio of these Spaces, or keep it from being a ratio of nothings.” In order to assist your understanding, it must not be omitted that the said two points are supposed to exist at the same time in one point, and to be moved different ways without stirring from that point. Mr. *Walton* hath the Conscience to call this Riddle a full and clear Answer: to make sense of which you must suppose it one of his Ironies. In the next and last Article of his performance, you still find him proceed in the same Vein of Raillery upon Fluxions.

XIV. IT will be allowed, that who ever seriously undertook to explain the second, third and fourth Fluxions of Sir *Isaac Newton*, would have done it in a way agreeable to that great Man’s own Doctrine. What Sir *Isaac*’s precise notion is I will not pretend to say. And yet I will venture to say, it is something that cannot be explained by the three dimensions of a Cube. I frankly own, I do not understand Sir *Isaac*’s Doctrine so far as to frame a positive Idea of his Fluxions. I have, nevertheless, a negative conception thereof, so far as to see that Mr. *Walton* is in jest, or (if in earnest) that he understands it no more than I do.

XV. SIR *Isaac* tells us that he considers indeterminate quantities as flowing, or in other words, as increasing or decreasing by a perpetual motion. Which quantities he denotes by the latter Letters of the Alphabet, and their Fluxions or Celerities of increasing by the same Letters pointed over head, and the Fluxions of Fluxions or second Fluxions, *i.e.* the Mutations more or less swift of the first Celerities, by the same letters pointed with double points; and the Mutations of those Mutations of the first Mutations or Fluxions or Celerities of increasing, which he calls Fluxions of Fluxions of Fluxions or third Fluxions, by three points; the fourth Fluxions by four points; the fifth by five; and so on *. Sir *Isaac*, you see, speaks of quantity in general. And in the Analyst the Doctrine is exemplified and the Case is put in lines. Now in lines, where there is only one Dimension, how are we enabled to conceive second, third or fourth Fluxions by conceiving the generation of three dimensions in a Cube? Let any one but read what Sir *Isaac Newton* or what I have said, and then apply what Mr. *Walton* hath written about the three dimensions of a Cube, and see whether the difficulties are solved or the Doctrine made one whit the clearer by this Explication.

XVI. THAT you may the better judge of the merit of this Part of Mr. *Walton*’s performance, I shall beg leave to set down a Passage or two from the Analyst. “As it is impossible to conceive Velocity without time or space, without either finite length or finite duration, it must seem above the Power of Man to comprehend even the first Fluxions. And if the first are incomprehensible, what shall we say of the second and third Fluxions, *&c.* He who can conceive the beginning of a beginning or the end of an end, somewhat before the first or after the last, may perhaps be sharpsighted enough to conceive these things. But most Men, I believe, will find it impossible to understand them in any sense whatsoever. One

* See his *Treatise de quadratura curvarum*.

would think that Men could not speak too exactly on so nice a subject. And yet we may often observe, that the exponents of Fluxions or notes representing Fluxions are confounded with the Fluxions themselves. Is not this the Case, when just after the Fluxions of flowing quantities, were said to be the celerities of their increasing and the second Fluxions to be the Mutations of the first Fluxions or celerities, we are told that \dot{z} . \dot{z} . z . \dot{z} . \ddot{z} . represents a series of quantities whereof each subsequent quantity is the Fluxion of the preceding; and each foregoing is a fluent quantity having the following one for it's Fluxion? Divers series of quantities and expressions Geometrical and Algebraical may be easily conceived in lines, in surfaces, in species, to be continued without end or limit. But it will not be found so easy to conceive a series, either of mere Velocities or of mere nascent Increments, distinct therefrom and corresponding thereunto." * Compare what is here said with Mr. *Walton's* Genesis of a Cube, and you will then clearly see how far this answerer is from explaining the nature of second, third and fourth Fluxions: And how justly I might repay that Gentleman in kind, and tell him in his own language, that *all his skill is vain and impertinent*, (vind. P. 36.).

XVII. BUT it doth not become me to find fault with this learned Professor, who at bottom militates on my Side, and in this very Section, makes it his business directly to overthrow Sir *Isaac Newton's* Doctrine. For he saith in plain Terms, that there can be no fourth Fluxion of a Cube (P. 25.) that is, there can be no second Fluxion of a line, and *a fortiori*, no third, fourth, fifth, &c. Insomuch that with one single dash of his Pen Mr. *Walton* destroys, to the great relief of the learned World, an indefinite rank of Fluxions of different Orders that might have reached from Pole to Pole. I had distinctly pointed out the difficulties in several Parts both of my Analyst and Defence, and I leave you to judge whether he explains or even attempts to explain one of them. Instead thereof he tells us of the trine Dimension of a Cube generated by Motion: Whence he takes occasion, as hath been observed, to explode Sir *Isaac's* own Doctrine, which is utterly inconsistent with Mr. *Walton's*. And can you now doubt the real design of this egregious Vindicator?

XVIII. BEFORE ever Sir *Isaac Newton* thought of his Fluxions, everybody knew there were three Dimensions in a Cube, and that a Solid might be generated by the motion of a Surface, a Surface by the motion of a Line, and a Line by the motion of a Point. And this in effect is all we know from Mr. *Walton's* Explication. As for his dwelling so minutely on the Genesis of the solid Parts of a Cube, a thing so foreign from the Purpose, the only rational Account I can give of it is, that Mr. *Walton*, by puzzling the Imagination of his vulgar Readers, hoped the better to disguise his betraying the Doctrine of his great Client, which to a discerning eye he manifestly gives up; and instead thereof humorously substitutes, what all the World knew before Sir *Isaac* was born, to wit, the three Dimensions of a Cube and the genesis thereof by Motion.

XIX. UPON the whole I appeal to you and every intelligent Reader, whether this thing, which Mr. *Walton* is pleased ironically to call a full Answer, doth not carry throughout a sly Insinuation, that the profound Science of Fluxions cannot be maintained but by the help of most unintelligible Paradoxes and Inconsistencies. So far, indeed, as Affirmations go he sheweth himself an able Support of Sir *Isaac Newton*. But then in his Reasonings he drops

* *Analyst* Sect. 44, 45, 46.

that great man upon the most important Points, to wit, his Doctrine of Motion and his Doctrine of Fluxions, not regarding how far the demonstration of his famous Principia is interested therein. To convince you still more and more of the Truth hereof, do but reflect a little on Mr. *Walton's* Conduct. Can you think it probable, that so learned and clear-headed a Writer would have laid down such a direct repugnancy to common Sense, as his Idea of Motion in a Point, for the groundwork of his Explanation, had it been his real Intention to explain? Or can you suppose, he would have been absolutely silent, on so many Points urged home, both in the Analyst and Defence, which it concerned a Vindicator of Sir *Isaac* not to have overlooked? Can you imagine, that if he meant seriously to defend the Doctrine of Fluxions, he would have contented himself with barely asserting that “Sir *Isaac Newton* in the Introduction to his Quadrature of Curves, in the second Lemma of the second Book, and in the Scholium to the first Section of the first Book of his Principles of Philosophy, hath delivered his Doctrine of Fluxions in so clear and distinct a manner, without the least Inconsistency in terms or Arguments, that one would have thought it impossible for any Person not to have understood him” (P. 30).

XX. Is it possible, I say, that Mr. *Walton* could in earnest hope we should take his bare Word, as so much more credible than Sir *Isaac's*, and not rather have endeavoured to answer the Questions and reconcile the Difficulties set forth in my Defence of Free-thinking, for instance, in Sect xxxvi. Wherein I entreat my Antagonist to explain “whether Sir *Isaac's* Momentum be a finite Quantity or an infinitesimal or a mere Limit, *adding*, if you say a finite Quantity, be pleased to reconcile this with what he saith in the Scholium of the second Lemma of the first Section of the first Book of his Principles: *Cave intelligas quantitates magnitudine determinatas, sed cogita semper diminuendas sine limite*. If you say an Infinitesimal: Reconcile this with what is said in his Introduction to his Quadratures: *Volui ostendere quod in methodo Fluxionum non opus sit figuras infinite parvas in Geometriam inducere*. If you should say it is a mere Limit, be pleased to reconcile this with what we find in the first Case of the second Lemma in the second Book of his Principles: *Ubi de lateribus A & B deorant momentorum dimidia, &c.* where the Moments are supposed to be divided.” I shall scarce think it worth my while to bestow a serious thought on any Writer who shall pretend to maintain Sir *Isaac's* Doctrine, and yet leave this Passage without a Reply. And the Reader, I believe, will think with me that, in answer to difficulties distinctly proposed and insisted on, to offer nothing but a magisterial Assertion is a mere grimace of one who made merry with Fluxions, under the Notion of defending them. And he will be farther confirmed in this way of thinking, when he observes that Mr. *Walton* hath not said one Syllable, in reply to those several Sections of my Defence, which I had particularly referred to, as containing a full answer to his Vindication. But it is no wonder if, with Sir *Isaac's* Doctrine, he should drop also his own Arguments in favour thereof.

XXI. I HAVE been at the Pains once for all to write this short Comment on Mr. *Walton*, as the only way I could think of for making him intelligible, which will also serve as a Key to his future Writings on this Subject. And I was the rather inclined to take this trouble, because it seemeth to me, there is no part of Learning that wants to be clear'd up more than this same Doctrine of Fluxions, which hath hitherto walked about in a mist to the Stupefaction of the Literati of the present Age. To conclude, I accept this Professor's Recantation, nor am at all displeas'd at the ingenious method he takes to disguise it. Some zealous Fluxionist

may perhaps answer him.

FINIS.